



FCC meeting July, 18th 2011

Potential Waiver and Rule Making Change to Part 15.247

Starkey Laboratories, Inc.

Jeff Solum

07/18/2011



FCC meeting July, 18th 2011

Agenda

Restatement of Waiver Request

Starkey Position Statement

Demonstration

System Integration Test

Field Test Survey

Timeline of FCC Related Issues

Open Discussion

Next steps



FCC meeting July, 18th 2011

The Waiver Request

The following modification is proposed for the waiver under 15.247(a)(2)

Starkey Laboratories, Inc., has filed a request for waiver of Part 15 of the Commission's rules to permit a reduction in the 6 dB-minimum bandwidth requirements under Section 15.247(a)(2) for unlicensed operation of systems using digital modulation techniques in the 902-928 MHz (915 MHz) band.

Section 15.247(a)(2) permits operation of systems using digital modulation techniques within the 915 MHz band with a minimum 6 dB bandwidth of **500** KHz.

Starkey Laboratories requests that its transmitters be permitted to operate in the 915 MHz band with a narrower 6 dB bandwidth of **100** KHz, while maintaining the 8dBm/3 kHz power spectral density limit specified in Section 15.247(e) of the commission's rules.

*This changes the **500** KHz requirement of 15.247(a)(2) to **100** KHz without changing the power spectral density requirement. Which is in keeping with the spirit of 15.247(e), that requires a maximum power spectral density of 8dBm/3KHz.*



FCC meeting July, 18th 2011

Starkey Position Statement

Starkey believes that lowering the minimum bandwidth requirement from 500 kHz to 100 kHz would eliminate the current rule's effect of encouraging users to increase their necessary occupied bandwidth for the purpose of obtaining a higher spectral density and thus potentially increasing interference.

The rule change would make for better and more efficient use of bandwidth.



FCC meeting July, 18th 2011

Starkey Position Statement

The requested waiver and rule change will increase the reliability and extend the range of wireless connectivity in hearing instruments.

The rule change would serve the public interest by making better and more efficient use of the available spectrum in the 902-928 MHz band. See the IEEE802.18 comments filed on this matter on May 4th, 2009.



FCC meeting July, 18th 2011

Starkey's vision for personal connectivity

Demonstration of Starkey products

Hearing Aids

SURFLINK Remote Control

SURFLINK Media Device

SURFLINK Cellphone Interface



FCC meeting July, 18th 2011

Field Test Survey

Executive Summary

66 different field sites were tested though out North America in which a wide variety of RF interference patterns (both in and out of band) were seen and documented. Of these sites, nine are singled out as “Difficult to Fair” working environments for reasons that include:

Significant in-band interference (>-85 dBm)

Significant out-of-band interference (>-40 dBm)

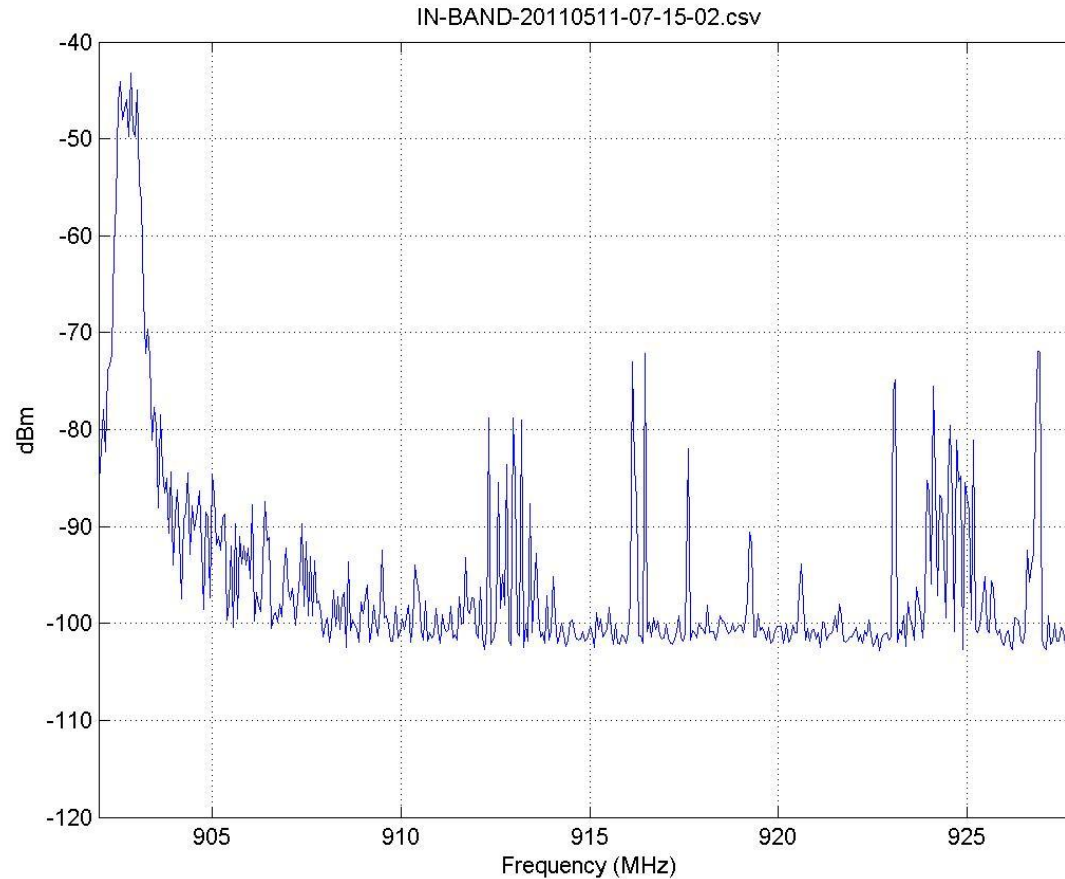
Long average transaction times (>160 ms)

All other sites were considered good. The Starkey system performed without significant errors in all “difficult” environments



FCC meeting July, 18th 2011

Example of Difficult Environment





FCC meeting July, 18th 2011

System Verification Tests

All products are tested including all hearing aid types in the face of interference.

Lab tests are conducted under controlled conditions that simulate real world interference.

- AWGN over large portions of the band.

- Slowly random sweeping interference to simulate narrowband interference and frequency hopping interference.

- Random wideband noise bursts to simulate TDM and DSSS systems.

- All combinations of the above impairments are tested.

Field tests are conducted under uncontrolled but particularly difficult environments.

The system currently works in all environments found on 66 Field trial locations though out the US.



FCC meeting July, 18th 2011

Timeline

December 3rd 2007 Starkey meets with FCC on potential rule making and waiver request.

February 5th 2008 Starkey is granted experimental license 0695-EX-PL-2007.

April 11th 2008 Starkey files waiver request and rule making request.

March 26th 2009 FCC publishes first public notice for waiver request and rule making change request ET 09-38 and RM-11523.

April 27th 2009 Public comment period begins.

May 4th 2009 IEEE 802.18 Endorses Waiver and Rule making request.

May 20th 2009 Starkey files reply comments.

May 20th 2009 Public comment period ends.

March 26th 2010 Starkey requests meeting with FCC OET.

April 21st 2010 Starkey meets with FCC OET.

April 22nd 2010 Starkey submits report on Adaptive Frequency Selection and Listen Before Use.

December 21st 2010 Starkey submits test report on experimental license.

June 22nd 2011 Starkey requests meeting with the FCC OET.

July 18th 2011 Starkey meets with FCC OET.



FCC meeting July, 18th 2011

Open Discussion



FCC meeting July, 18th 2011

Next Steps



FCC meeting July, 18th 2011

Thank You!